What is claimed is:

1. A method of welding a plurality of workpieces, comprising the steps of:

positioning a welding tip and a tip guide adjacent to one another;

controllably advancing a gathering block toward the tip guide to stop it in an initial position at a predetermined distance from the tip guide, thereby forming a preset width of a partly open workpiece nest;

loading workpieces to be welded in the nest on the ultrasonic tip to have the workpieces substantially vertically aligned with one another to form at least one vertical column adjacent to the tip guide and the gathering block;

controllably displacing an anvil downward toward the welding tip to peripherally close the workpiece nest, thereby exerting a predetermined pressure upon the column;

ultrasonically agitating the working tip to produce a splice;

displacing the gathering tool away from the initial position for a predetermined period of time, thereby removing the splice; and

moving the gathering tool back to the initial position, thereby establishing the preset width of the workpiece nest for receiving workpieces to be welded.

2. The method defined in claim 1, further comprising the step of introducing a data containing a diameter D of single workpiece and an approximate number of the workpieces to be welded, the gathering block being displaceable to form the preset width of the nest substantially equal to the diameter D times number of columns N in response to the introduced data.

3. The method defined in claim 2, further comprising the step of sensing contact between the one column and the gathering block and the tip guide upon loading of the workpieces to be welded in the workpiece nest.

4. The method defined in claim 1, further comprising the step of controllably displacing the anvil toward and away from the gathering block, thereby

enclosing and opening the workpiece nest for subsequent welding and removal of the splice.

5. The method defined in claim 4, further comprising the step of sensing the pressure exerted upon the one column by the anvil upon its displacement towards the welding tip.

6. The method defined in claim 1, further comprising the step of delaying the displacement of the gathering block to the initial position for a predetermined period of time.

7. The method defined in claim 6, wherein the predetermined period of time does not exceed 5 seconds.

8. The method defined in claim 1, further comprising the step of simultaneously displacing the anvil and tip guide toward the welding tip to controllably close the workpiece nest, the welding tip having a work surface extending generally in a horizontal plane and flanked by spaced apart side surfaces, one of which is adjacent to a meeting surface of the tip guide extending vertically beyond the welding tip to form one of the walls of the workpiece nest.

9. The method defined in claim 8, wherein the working surface of the welding tip is serrated and is parallel to a bottom of the anvil formed with a serrated portion which faces the working surface of the welding tip upon enclosing the workpiece nest.

10. A method of ultrasonically welding workpieces, comprising the steps of:

introducing a data corresponding to a diameter of a single workpiece to be welded with a plurality workpieces, each having the diameter and collectively forming a bundle of predetermined size;

forming a partially open workpiece nest by displacing gathering block and tip guide block linearly in opposite directions to form side surfaces of the workpiece nest;

arresting the displacement of the tip guide and gathering blocks to obtain a predetermined width of the workpiece nest corresponding to the predetermined size of the bundle of workpieces in response to the introduced data;

loading a plurality of workpieces substantially aligned with one another in a vertical plane on the welding tip in the workpiece nest, thereby forming at least one vertical column abutted by the side surfaces of the workpiece nest;

controllably displacing an anvil toward the welding tip to exert a predetermined pressure upon the one column, thereby forming a splice; and

reciprocally displacing at least one of the gathering and tip guide blocks away from the workpiece nest to provide a predetermined period of time sufficient to remove the splice, and back to repeatedly provide the predetermined width of the workpiece nest.

11. An ultrasonic welder comprising:

an ultrasonically agitated welding tip having a welding surface which extends in a plane;

a tip guide juxtaposed with the welding tip and having a guide surface extending perpendicular to the support surface;

an anvil atop of the tip guide and having an anvil surface extending parallel to the support surface;

a gathering block having a gathering surface extending parallel to the guide surface; and

a controller actuating the gathering tool to move to an initial position, wherein the gathering surface is spaced apart from the guide surface at a predetermined distance to form a workpiece nest defined between the anvil, support, gathering and guide surfaces and having a width sufficient only for stacking workpieces to be welded upon one another, the controller actuating the gathering tool to move in a time-controlled manner away from

the working space to remove the welded workpieces and displacing the gathering tool back to the initial position, so as to place a new plurality of workpieces upon one another on the welding surface.

12. The ultrasonic welder defined in claim 11 wherein the anvil is controllably movable toward the welding tip to exert a preset pressure.

13. The ultrasonic defined in claim 11 wherein the controller has a memory unit displacing the gathering block at said predetermined distance in response a data containing a diameter of the workpiece.

14. The ultrasonic welder defined in claim 11 wherein the width of the working space is sufficient to stack at least one column of the workpieces flanked and supported by the guide and gathering surfaces.

15. The ultrasonic welder defined in claim 11 further comprising a pressure sensor for detecting the preset pressure exerted by the anvil.

16. The ultrasonic welder defined in claim 11 wherein the gathering block is controllably stopped at a predetermined period of time before moving back toward the tip guide.

17. The ultrasonic welder defined in claim 11 further comprising an ultrasonic horn having an end face, said welding tip having a plurality of spaced apart holes, each receiving a respective bolt fastening the welding tip to the end face.

18. The ultrasonic welder defined in claim 17 wherein each of the holes has an inner periphery provided with a continuous pad made of resilient material and attached thereto to provide a buffer zone between the horn and welding tip.

Sub A4

19. An ultrasonic welder for splicing a plurality of workpieces comprising:

four anvils having meeting surfaces two of which form side faces of a workpiece nest having substantially a rectangular shape of a preset width which is defined between the side faces of the nest spaced from one another in an initial position and is sufficient only for receiving the workpieces aligned with one another in a vertical plane; and

a controller displacing at least one of the anvils forming the side faces from the initial position to a remote position for a predetermined period of time sufficient to remove the welded workpieces and back to the initial position upon terminating of the predetermined period of time to reestablish the preset width before the workpiece nest receives new vertically aligned workpieces.

20. The ultrasonic welder defined in claim 19, wherein one of the anvils forming the side faces of the workpiece is selected from a group consisting of gathering and tip guide blocks.

Add A5